# APPLICATION

## FOR

## UNITED STATES LETTERS PATENT

TITLE:        CONFIRMING VIDEO TRANSMISSIONS

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# CONFIRMING VIDEO TRANSMISSIONS

## BACKGROUND

This invention relates generally to video transmissions such as interactive broadcasting which involves, for example, broadcasting television programming together with web content.

A broadcast encoder interleaves, or multiplexes, television programming and web content and transmits it over a transport. A given transport could have a variety of different bandwidths. For example, one transport may be an airwave broadcasting system where the web content is provided over the vertical blanking interval (VBI). Other transports of potentially greater bandwidths include cable and satellite transmissions.

A content provider may provide television programming or the web content information to a broadcast encoder which then transmits the broadcast to a plurality of users over one or more transports. The users may receive the broadcast using a computer adapted television receiver. Thus, the user station may involve a set-top computer which operates a television receiver or a conventional computer equipped with a television capture card.

Because of bandwidth limitations and the availability of multiple transport mechanisms, it may be difficult for the broadcast encoder to report when a particular broadcast has actually occurred. For example, a particular piece of web content information may be routed over available bandwidths. During busy periods, these bandwidths may be

tied up for considerable amounts of time or the available transmission bandwidths may be relatively limited. Therefore, it may not be determinable in advance, in all cases, exactly when a particular transmission will occur,

5   how long it may take to complete the transmission, and when the transmission will be completed.

This lack of transmission certainty may be a problem for the content provider who may need to know when a transmission has been completed and how long a particular

10  broadcast encoder takes to transmit the content provider's web content. This may be important in a variety of settings including determining whether a particular broadcaster has complied with its contractual obligations to broadcast a particular item and in ensuring that users have received

15  information which may be critical to subsequent transmissions or subsequent activities. The content provider may not be able to proceed with other transmissions or activities until it knows that an initial transmission has been received.

20       Thus, there is a need, in connection with interactive broadcasting, for providing confirmation services.

## SUMMARY

In accordance with one embodiment, a method for

25  tracking video transmissions includes setting a first marker in the transmission data. Transmission after the first marker is tracked and reported.

## BRIEF DESCRIPTION OF THE DRAWING

Figure 1 is a conceptual depiction of an interactive broadcasting system in accordance with one embodiment of the present invention;

Figure 2 illustrates a tracking system useful in the embodiment shown in Figure 1;

Figure 3a is a flow diagram showing the operational software used on the broadcast encoder or the content provider shown in Figure 1; and

Figure 3b is a continuation of Figure 3a.

## DETAILED DESCRIPTION

An interactive broadcasting system 10, shown in Figure 1, allows a broadcast encoder to multiplex web content and television programming, and to broadcast the multiplexed information to a group of users 14. The broadcast encoder 12 may receive the content from a content provider 16. Periodically, the broadcast encoder may report on broadcast progress to the content provider. In addition, the broadcast encoder may provide a log-in server 18 which allows the content provider to check on the progress of commissioned broadcasts. Software may be provided in a memory 39 on either or both of the broadcast encoder 12 and the content provider 16 to provide broadcast tracking services.

While the illustrative embodiments relate to broadcasts, the present invention is applicable to other video transmissions such as multicasting. In addition, while a broadcast of television content is illustrated, non-television content may be encompassed as well.

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Referring to Figure 2, software 38 may interact with a broadcast encoder application 22. The broadcast encoder application software may report tracking information received from the tracking software 38 to the log-in server

5    18 so that the tracking information may be made accessible to the content provider.

When the broadcast encoder application 22 wishes to obtain tracking services, it initiates the BeginTransmission() method 24. The broadcast encoder

10   application 22 may obtain tracking services either upon request from the content provider or upon its own initiative.

The BeginTransmission() method 24 (as well as other methods mentioned herein) may be a method available in an

15   object-oriented programming language such as COM, ActiveX, or Java. In addition, function calls or Application Program Interfaces (APIs) may be utilized with non-object oriented programming languages to implement such tasks.

When the BeginTransmission() method 24 is called, the

20   method obtains a handle 26 and returns the handle to the broadcast encoder application 22. The handle provides a pointer to a marker within the broadcast data stream.

When the broadcast encoder application 22 wishes to obtain information about broadcast details, it may call the

25   GetTransmissionDetails() method 36. The method 36 returns a variety of transmission details to the broadcast encoder application 22. It can provide information about how much information has been sent, how much information has been received, whether information was lost, whether data has

30   been cached, and other pertinent details.

The method 36 calls a count server 30 which includes a
bit counter 32 and a time counter 34. The count server 30
counts transmitted bits and elapsed time. Thus, the
GetTransmissionDetails() method 36 provides an indication of
current transmission details as obtained from the count
server 30. The GetTransmissionDetails() method 36 may be
called at any time to give tracking information current as
of that particular time.

The broadcast encoder application 22 uses the handle 26
it received previously to obtain the appropriate
transmission details. In any given data transmission, there
may be a number of markers which may be placed in the data
flow either by the broadcast encoder 12 or the content
provider 16. By identifying a particular handle, associated
with a particular marker, the broadcast encoder application
22 receives the particular tracking information, associated
with a particular marker, which is desired.

The broadcast encoder application can also call the
EndTransmission() method 28. The method 28 communicates
with count server 30 and completes a given tracking service
associated with a particular marker. Thus, when the
EndTransmission() method is called, the transmission details
are provided up to that instance of time when the method 28
was called, and the marker is deactivated by terminating its
associated handle.

In some instances, a particular marker may be passed to
a plurality of data transmission streams which may be
broadcast over different channels. In some cases, it may be
desirable to know how much information has been transmitted
by a group of broadcast streams, for example, associated

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with a particular content provider.  By using the same
marker in each of the streams, the GetTransmissionDetails()
method 36 may be invoked to provide cumulative information
about the data flow over the group of streams, referred to
5    as a session.

Since the marker is not associated with the data flow
directly, the use of the marker can be extended to measure
any event occurring in the system at any level of
granularity.  Random events that may happen in the system
10   may be monitored using markers which exist within the system
as independent entities.  As a marker is enabled, it becomes
a measurement of an event which may be used to confirm,
measure and log necessary information related to that event.

Markers can be provided at any level or granularity of
15   the data transmission.  For example, a data transmission may
include a number of files, and markers may be associated
with each of those files as well as with the overall
broadcast that may include a plurality of files.  Thus,
information may be provided about the transmission of any
20   one of the files and with respect to the overall
transmission of files in the broadcast as well as any sub-
group of files.

Initially, the MeasureTransmission software 38 awaits a
request to measure data which may come from the broadcast
25   encoder application, as indicated in diamond 40 in Figure
3A.  Upon receipt of such a request, the system calls the
BeginTransmission() method which provides a handle or
pointer for the application to access a particular marker,
as indicated in blocks 42 and 44.  Once a marker has been
30   inserted and a handle has been provided, the transmission

details may be cumulated (block 46) by the count server 30, shown in Figure 2. When the GetTransmissionDetails() method is invoked, as indicated in diamond 48, the current details are obtained and a report may be provided to a log-in server 18, as indicated in blocks 50 and 52.

When the EndTransmission() method is called, as indicated in diamond 54, the appropriate handle is used as indicated in block 56 (Figure 3B). As a result, the transmission details may be obtained and reported as indicated in blocks 58 and 60. Thereafter, the handle is terminated, as indicated in block 62.

While the present invention has been described with respect to a limited number of embodiments, those skilled in the art will appreciate numerous modifications and variations. It is intended that the appended claims cover all such modifications and variations as fall within the true spirit and scope of the present invention.

What is claimed is: